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09/577,340	05/24/2000	Hiroaki Takebe	826.1605/JDH	5834

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EXAMINER

LU, TOM Y

ART UNIT	PAPER NUMBER
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2621

DATE MAILED: 07/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/577,340

Applicant(s)

TAKEBE ET AL.

Examiner

Tom Y Lu

Art Unit

2621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 and 19-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 25 April 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's election without traverse of species I, claims 1-17 and 19-21, in Paper No. 7 is acknowledged.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 3, 5-10, 17 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors.

- a. With regarding to Claim 3, the examiner does not understand the limitation of "a difference level computation unit comparing a difference level between the feature amount of the category and the feature amount of the image *corresponding to the correspondence*).
- b. With regarding to Claim 5, the examiner fails to understand the limitations cited in claim, such as "a search unit searching... by allowing *an* sequence of remaining elements... the last element in the sequence of the elements of the category", such claim language is incomprehensible.
- c. Claims 6-10 are rejected as being dependent upon Claim 5.
- d. With regarding to Claim 17, the examiner fails to understand the term of "setting" in "setting a category used in the segmenting process as a recognition result of an

area segmented from the image”. The examiner interprets setting as updating for the purpose of examination.

- e. With regarding to Claim 21, the rejection is same as Claim 5.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

- 3. Claims 1-8, 11-14, 16-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Kamitani (U.S. Patent No. 6,327,385 B1).

- a. As applied to Claim 20, which is representative of Claim 1, Kamitani discloses feature amount extraction means for extracting a feature amount of an image (Kamitani at column 2, lines 7-9, discloses a partial pattern detecting unit 121 as shown in figure 1 for extracting areas coincident with the partial patterns from the image of the character string. A partial pattern detecting unit 121 corresponds to the claimed “feature amount extraction means”. The areas, which is consisted of pixels as shown in figure 5, coincident with the partial patterns corresponds the claimed “feature amount”); feature amount setting means for setting feature amount of a category (Feature extraction inhibited area dictionary 132 shown in figure 1 corresponds to the claimed feature amount setting means); feature amount comparison means for comparing the feature amount of the category with

the feature amount of the image (Character separating feature extracting area defining unit 131 in figure 131 corresponds to the claimed “feature amount comparison means”, column 2, lines 15-17); and segmentation means for segmenting a portion corresponding to the feature amount of the category from the image (Character boundary portion detecting unit 134 in figure 1 corresponds to the claimed “segmentation means”, column 2, lines 23-25).

- b. Referring to Claim 2, Kamitani discloses wherein said feature amount comparison unit comprises a correspondence generation unit generating correspondence between the feature amount of the category and the feature amount of the image, and compares the feature amount of the category with the feature amount of the image (Kamitani at column 5, lines 15-24, discloses calculating the degree of coincidence between the partial pattern and the image of character string).
- c. Referring to Claim 3, Kamitani discloses a difference level computation unit comparing a difference level between the feature amount of the category and the feature amount of the image corresponding to the correspondence (column 5, lines 15-24); and an optimum correspondence extraction unit extracting optimum correspondence indicating a lowest difference level from the correspondence, wherein said segmentation unit segments a portion indicating a difference level corresponding to the optimum correspondence equal to or lower than a predetermined value (Kamitani at column 6, lines 50-54, discloses when the degree of coincidence is larger or equal to a predetermined threshold, the character has serif. In addition, Kamitani at column 7, lines 28-30, discloses when

Art Unit: 2621

the font of characters constituting the string is determined as one having serif, the masking is performed for the objective picture prior to the procedures for obtaining the character separating feature).

- d. As applied to Claim 4, which is representative of Claim 14, Kamitani discloses a combination unit generating a combination of segmentation areas by said segmentation unit such that each pattern segmented by said segmentation unit can correspond to any category to be recognized; and a segmentation area determination unit determining a segmentation area of the image by prioritizing a combination indicating a smaller difference level accumulation value in the combinations (Kamitani teaches partial pattern detector unit 121 calculates the degree of coincidence for each of the characters in the image of character string by overlapping the partial patterns from partial pattern dictionary 122 over the image of character string. Therefore, it is inherently true that the dictionary recognizes all the segmented characters).
- e. As applied to Claim 5, which is representative of Claim 21, Kamitani discloses a feature amount extraction unit extracting a feature amount of a character string image as a sequence of elements in a character string array direction (Kamitani at column 5, lines 7-8, discloses the image of a character string stored in the image storing unit 110 is read into the partial pattern detecting unit 121 as shown in figure 1. In addition, Kamitani at column 2, lines 7-9, discloses a partial pattern detecting unit 121 as shown in figure 1 for extracting areas coincident with the partial patterns from the image of the character string. A partial pattern detecting

Art Unit: 2621

unit 121 corresponds to the claimed "feature amount extraction means". The areas coincident with the partial patterns corresponds the claimed "feature amount". The elements are the pixels as shown in figure 5. Moreover, Kamitani at column 5, line 21, discloses the direction is from left to right); a feature amount setting unit setting a feature amount of a category in a category array direction (Kamitani at column 5, lines 10 discloses partial pattern stored in the partial pattern dictionary is read in the partial pattern detecting unit 121. the partial pattern detecting unit 121 corresponds to the claimed "feature amount setting unit". In addition, at column 6, lines 30-31, Kamitani teaches the direction is from left to right as well since the reference coordinates start from (1,8) to (8,8) to (13,8)); a correspondence unit corresponding a last element in the sequence of the elements of the category with each element of the character string image (Kamitani at column 5, lines 12-24, discloses the overlapping process between the image character string and the partial patterns, which is done by shifting the partial patterns from left to right, pixel by pixel); a search unit searching for an element of the character string image corresponding a last elements in the sequence of the elements of the category with each element of the character string image; a search unit searching for an element of the character string image corresponding to a first element of the sequence of the elements of the category by allowing a sequence of remaining elements of the category with the element of the character string image for correspondence of the last element in the sequence of the elements of the category (column 5, lines 12-24); a difference level computation unit computing a

difference level between the character string image and the category corresponding to each other in the sequence of the elements (Kamitani at column 6, lines 24-33, discloses the degree of coincidence is obtained based on the overlapping process between the partial pattern and the image of character string as described at column 5, lines 12-24. The degree of coincidence corresponds to the claimed "difference level"); and a discrimination unit discriminating a segmentation position of a character from the character string image based on the difference level (Kamitani at column 6, lines 50-54, discloses when the degree of coincidence is larger or equal to a predetermined threshold, the character has serif. In addition, Kamitani at column 7, lines 28-30, discloses when the font of characters constituting the string is determined as one having serif, the masking is performed for the objective picture prior to the procedures for obtaining the character separating feature).

- f. Referring to Claim 6, Kamitani discloses wherein said difference level is obtained from an accumulation result of a distance between elements from the first elements to the last element in the sequence of the elements of the category (column 5, lines 15-24, column 6, lines 24-33).
- g. Referring to Claim 7, Kamitani discloses wherein said search unit makes correspondence of a current element in the correspondence of past elements based on the correspondence indicating the smallest accumulation value of the distance between elements (Column 6, lines 33-37).

- h. Referring to Claim 8, Kamitani discloses an entry unit entering a set of an element of the character string image corresponding to the first element of the sequence of the elements of the category and a corresponding difference level for all elements in the character string image array direction (Column 5, lines 7-8, 21); a search unit detecting a difference level indicating a value equal to or smaller than a predetermined value in difference levels specified by each element corresponding to the segmentation position of the character string image (column 6, lines 3-6); an obtaining unit obtaining the element of the character string image corresponding to the difference level retrieved by search unit from said entry unit; and a computation unit computing a next segmentation position of the character string image based on the element of the character string image obtained from said entry unit (column 6, lines 10-18).
- i. Referring to Claim 11, Kamitani discloses setting a feature amount of a category (Kamitani at column 3, lines 55-56, discloses a partial pattern dictionary 122 for storing partial patterns which become features for specifying the character font); searching for an area corresponding to the feature amount of the category in an image (Kamitani at column 4, lines 23-26, discloses the partial pattern detecting unit 121 compares the partial pattern stored in the partial pattern dictionary 122 with the image of character string stored in the image storing unit 110 and detects an area in which the partial pattern in the partial pattern dictionary 122 is matched with the image of character string); and segmenting an area obtained in the searching process from the image (Kamitani at column 4, lines 60-63, discloses

the character boundary position detecting unit 134 specifies a separating position of a character from the character separating feature).

- j. Referring to Claim 12, Kamitani discloses wherein said feature amount of the category is compared with the entire feature amount of the image in a continuous DP method (column 5, lines 15-24).
- k. Referring to Claim 13, Kamitani discloses wherein said feature amount is peripheral features up to an n-th peripheral feature (Kamitani teaches the pixel area shown in figure 5 as claimed "peripheral feature").
- l. With regarding to Claim 16, the only difference between Claim 16 and Claim 5 is Claim 16 calls for an additional limitation of "independently scanning a first element and a last element in a sequence of elements of the category against the sequence of the elements of the character string image", such feature is taught by Kamitani in figure 4-7, where Kamitani suggests overlapping the partial pattern over the image of character string, and perform searching by shifting the pattern from left to right, such searching process corresponds to the claimed "scanning" process. The reference points (1,8), (8,8), (13,8) described at column 6, lines 30-31 correspond to the claimed "elements".
- m. With regarding to Claim 17, the only difference between Claim 17 and Claim 11 is Claim 17 calls for an additional limitation of "setting a category used in the segmenting process as a recognition result of an area segmented from the image", Kamitani at column 5, line 60, teaches the partial patterns are registerable in the dictionary, which implies the dictionary is updated as the new partial patterns

Art Unit: 2621

become available. The examiner interprets "setting" herein as updating the dictionary.

- n. With regarding to Claim 19, the only difference between Claim 19 and Claim 11 is Claim 19 calls for an additional limitation of "a computer-readable storage medium storing a program", Kamitani teaches that at column 8, lines 11-14.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kamitani in view of Tanaka et al (U.S. Patent No. 5,684,891).

Referring to Claim 15, Kamitani discloses segmenting a first segmentation area corresponding to a feature amount of a category from an image (the explanation is provided in Claim 1). However, Kamitani does not teach changing the first segmentation area when a second segmentation area cannot be segmented corresponding to a feature amount of a category from remaining areas of the image. Tanaka at column 22, lines 45-64, teaches block 503 is segmented as shown in figure 22C. However, the block 503 is actually only a part of a Japanese character as shown in figure 22D, which the system could not further segment the next character after block 503 as shown in figure 22C. Therefore, the system is changed the segmentation area for block 503 to 504 to completely segment the entire Japanese character. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to change the first

Art Unit: 2621

segmentation area because the second segmentation area cannot be segmented. One of ordinary skill in the art would have been motivated to do this because Tanaka at column 22, lines 25-28, discloses “if the preceding computed segmentation exhibits results relatively better than the results of the present segmentation, it is judged to execute re-segmentation at the preceding determination” since some characters, such as Japanese and Chinese, are ideographic, and they are ensemble.

Allowable Subject Matter

5. Claims 9-10 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Reason for allowance:

- a. Claim 9 defines a path generation unit generating a path connecting the segmentation position of the character string image with the next segmentation position of the character string image computed by said computation unit; a combination generation unit generating a combination of the paths by trading the character string image through the path; an evaluation unit evaluating the combination of the paths based on an accumulation result of a difference level assigned to the path. These features in combination with other features in Claim 9, which is the broadest allowable claim, are not taught or suggest by the art of record.
- b. Claim 10 is dependent upon Claim 9.

Conclusion

Art Unit: 2621

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tom Y Lu whose telephone number is (703) 306-4057. The examiner can normally be reached on 8:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo H Boudreau can be reached on (703) 305-4706. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Tom Y. Lu
June 26, 2003



LEO BOUDREAU
SUPERVISORY PATENT EXAMINER
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